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Feasibility Transportation Study- Big Shoals Site, Pike County, KY
Coal to Liquid (CTL) and Coal to Gas (CTG)-Equipment

Presented to:	Prepared by:
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Site Location:

- Big Shoals Site, Pike County, KY

Equipment List: Based on SMG, each site will received (2) of each piece of equipment

Equipment list	**Weight**	**Length**	**Width**	**Height**
Syngas Cooler	500-800Tons	140-160 ft	15.5 ft	15.5
Quench Gasifier	270-290 Tons	63 ft	13’-2”	13’-2”
Air Separation Cold boxes	Unknown	160-200 ft	10-12 ft	10-12 ft
Cylinder	200-400 tons	100 ft.		

Scope of Work:

EMR was contracted by SMG on June 3rd to investigate the feasibility of moving several large pieces from the closest barge and possible rail sidings to the selected site in the Commonwealth of Kentucky.

The goal of this report to evaluate the following:

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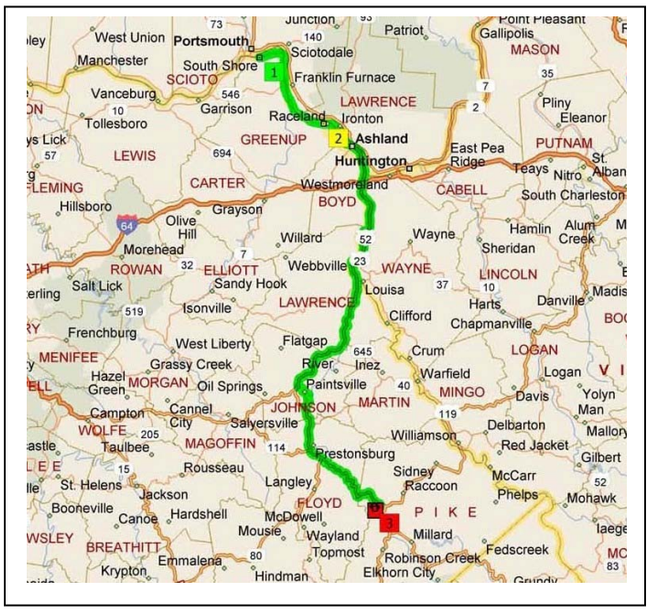
- Route Possibilities: encompassing the Dimensions and Weights of each piece, Grade issues, and overhead issues.
- Community Impacts
- Restrictions/Issues
- Preliminary Cost Analyze
- General Permit Requirements
- Agency Coordination
- Site Requirements

EMR has also included a summary and explanation of the EMR equipment that will be utilized in moving these pieces. The actually size and type of trailer, configurations equipment cannot not be determined until final weights and dimensions, permits, final site review, and final schedules are confirmed and set.

Disclaimer:
EMR has visited each selected site, ran several route possibilities, examined possible barge landing facilities under the time allowed and the information provide. This by no means is to be considered an exhaustive study, there are multiple unknown variables the will need to re-examined when final confirmation on the size of the pieces has been determined. EMR was told that the larger pieces would be broken into 3-4 smaller pieces but this information was not available prior to the deadline of his report. Due to sheer size of pieces and the topography of the site locations there are formidable restrictions and limitations.



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Evaluation of Big Shoals Site, Pikeville, KY

As discussed in the disclaimer not have final confirmations of dimensions and weights of the CTG/CTL pieces limits the overland transport possibilities due to the structures, length of route and grade.

This route which contains the majority passage of U.S. 23 (4-lane restricted highway) was selected as the best option due to its open access and clearances. The current bridges are substantially built to carry the heavily traveled coal trucks (80,000+ lbs) daily from the Eastern Kentucky Coal fields / mines. Though the bridge structures and road integrity are probably more suited for a heavy haul route the kind of weights suggested for the CTL/CTG equipment are pretty massive for any type of highway travel and intensive bridge analysis would need to be completed for final route approve from the State of Kentucky. It would be in the best interest for all to have these pieces broken down into more manageable weights and dimensions so that they could travel by rail to the site or hauled overland to make the overall project more efficient.

In actual movement of the equipment listed there will be a significant Community impact that would include:

- Traffic blockage- Each piece will move at 5-10 mph average pace which based on the current route would take at least 2-3 days to cover the distance.
- Temporary road closure based on limited access of certain areas or if smaller bridges would need to be plated/jumped in route.
- These obstacles are not unusual for movements of large loads but could present new issues such as night moves and extensive traffic plans.

EMR is very familiar with these and will be able to provide solutions to limit impact where possible.

Issues of the route:

- Route to be 100-125 miles in length, maybe longer depending on final route.
- Multiple bridges, each bridge would have to be approved by KYDOT with final trailer configuration, including crossing overpass over I-64
- Major community impact. The size of trailers with these loads are going to be slow moving and take up the entire width of travel in one direction. These travels might take several days to complete for each piece causing many detours, road closures, etc…
- Side and County roads closer to site will need to be expanded and bridges possibly be replaced, jumped, or shored up for support
- Multiple agencies including but not conclusive to would be involved. KYDOT, Municipalities, County Police, Local Police, Electric, Cable, Phone, etc…
- Grade issues:2%-8%, causing multiple pull trucks and back ups
- Overhead structures: Underpass under Hwy 80, finding alternative route, bypass using on/off ramp possibility
- Site issues with grade, road capability, bridges/underpasses

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At the site visit there was no accessibility to get inside the facility so evaluation of roads, route, bridges, etc… could not be completed in this preliminary analysis.

Conclusion/Feasibility/Budgetary Numbers:

As discussed in our general report on EMR capabilities and methodology on heavy haul and rigging, EMR has the capability to move these and larger pieces. The issue comes down to if the path from delivery point of a barge landing/rail siding to the final site has the capabilities of width, height, sustainable bridges to make it cost efficient and truly feasible.

Since the route at this point is going to be 100-125 miles to transport the equipment the cost associated with the issues escalate quite quickly. An extensive route survey would need to completed (6-12 months) to determine if the route can be confirmed based on the current dimensions and weight. This would need to be coordinated with the KYDOT to complete bridge analysis. If the pieces are broken down and confirmed then the costs could be more accurately predicted. It would also open the possibly of railing to a closer site to transport.

Transportation cost for these pieces is estimated at 8.5 million dollars from barge landing to site. These costs could be reduced based on schedule of arrival and multiple moves done at the same time. This would include construction of a landing, securing the barge, offloading each piece, transporting to site. It would not include the following costs: Permits, building a suitable road to the site, jumping/plating/matting any structures, or offloading at the final destination. This estimated is based on today's dollars and does not include a percentage escalator based on a future target date.